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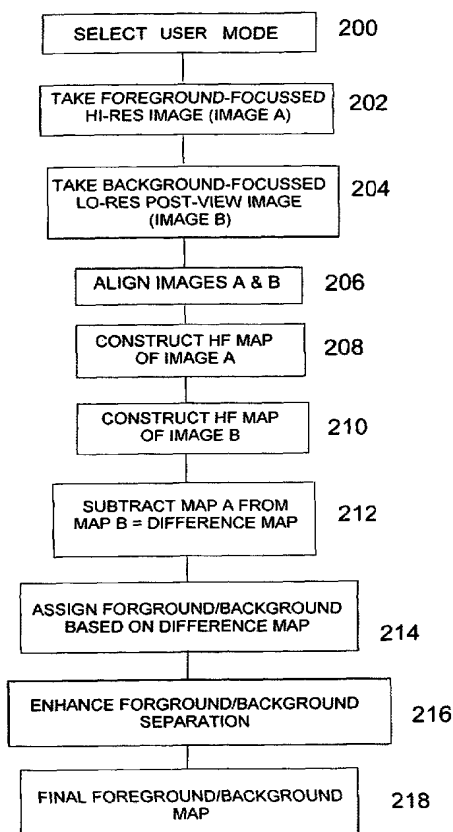
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[Continued on next page]

(54) Title: FOREGROUND/BACKGROUND SEGMENTATION IN DIGITAL IMAGES



(57) Abstract: An implementation efficient method of distinguishing between foreground and background regions of a digital image of a scene comprises capturing two images of nominally the same scene and storing the captured images in DCT-coded format, the first image being taken with the foreground more in focus than the background and the second image being taken with the background more in focus than the foreground. Regions of the first image are assigned as foreground or background according to whether the sum of selected higher order DCT coefficients decreases or increases for the equivalent regions of the second image.

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**Published:**

- *with international search report*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

**(88) Date of publication of the international search report:**

27 March 2008

# INTERNATIONAL SEARCH REPORT

International application No  
PCT/EP2006/008229

**A. CLASSIFICATION OF SUBJECT MATTER**  
INV. G06T7/00 G06T5/00

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
G06T

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, INSPEC

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 534 924 A (FLORANT OLIVIER [FR]) 9 July 1996 (1996-07-09) figures 1-3,6 column 2, line 11; claim 64 column 3, line 12 - line 40 column 4, line 41 - line 52	1-14
A	US 2003/052991 A1 (STAVELY DONALD J [US] ET AL) 20 March 2003 (2003-03-20) cited in the application figures 1,6,7 page 3, left-hand column, paragraph 32 - right-hand column, paragraph 40 ----- -/--	1-14

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

\* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*Z\* document member of the same patent family

Date of the actual completion of the international search

10 September 2007

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14/01/2008

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# INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2006/008229

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>FAVARO P: "Depth from Focus/Defocus"  INTERNET CITATION, [Online]  25 June 2002 (2002-06-25), XP002398665  Retrieved from the Internet:  URL:http://homepages.inf.ed.ac.uk/rbf&gt;  [retrieved on 2006-09-12]  cited in the application  the whole document</p> <p>-----</p>	1-14

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/EP2006/008229

## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers allsearchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search reportcovers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-14

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-14

one-lens sensor based foreground/background separation  
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2. claims: 15-23

automated detection of the orientation of images  
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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2006/008229

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5534924	A	09-07-1996	NONE	
US 2003052991	A1	20-03-2003	JP 2003179810 A	27-06-2003